CLAIMS

1. Device suitable for internally supporting vessels in particular circular vessels in the non-medical and medical fields, such as transmission pipes and blood vessels, the urinary tract, the digestive tract, and airways, said device comprising:

- an outer wall, and

- an inner wall in association with the outer wall, whereby both the inner and outer wall are expandable and contractible between an expanded support position, in which support position the outer wall contacts an internal surface of the vessel to be supported and a contracted displacing position wherein the device is displaceable to and from a pre-desired location in the vessel, and,

- releasable locking means for releasibly locking the device in the expanded support position and/or the contracted displacing position.

2. Device according to claim 1, wherein the outer and inner walls are provided in the form of one or more roughly circular elements.

3. Device according to claim 2 wherein the one or more roughly circular elements take the form of one or more rings.

4. Device according to any of the preceding claims, wherein the inner and outer walls comprise a first terminal part and a second terminal part.

5. Device according to claims 3 or 4 wherein the ring elements are interconnected by one or more linking members.

6. Device according to claim 5 wherein the releasible locking means comprise interlocking means provided on the first and/or second terminal parts.

7. Device according to claim 6 wherein the interlocking means comprise a catching element arranged on the first terminal part, said catching element being co-operable with a locking opening arranged on the second terminal part.

8. Device according to claim 7 further comprising guiding means for guiding the terminal parts over one another during expansion and/or contraction of the device.

9. Device according to claim 8 wherein the guiding means comprise one or more lip-sections in association with the first terminal part, which lip-sections cooperate with the second terminal part.

10. Device according to any of the preceding claims further provided with a tracing agent, whereby the device is traceable when arranged in position with the body by means of medical locating techniques such as magnetic resonance imaging.

11. Device according to any of the claims 1-10 further provided with a radio-active material in order to provide localized radiation therapy.

12. Device according to any of the preceding claims further comprising a medicament in order to locally treat a medical disorder within the body.

13. Device according to any of the preceding claims, the device being pre-tensioned to assume in its resting state, either the contracted position or the expanded position, preferably the contracted position.

14. Device according to any of the preceding claims, said device comprising a memory metal which assumes the contracted and/or expanded portion when exposed to certain conditions.

15. Device according to any of the preceding claims wherein when occupying a removal displacing position, the first terminal part is overlapped by the second terminal part and when occupying an insertion displacing position, the second terminal position is overlapped by the first terminal position.

16. Device according to any of the preceding claims wherein the locking means comprise a male projection arranged on the second terminal part, interlockable with a female receiver arranged on the first terminal part.

17. Device according to claim 16, further comprising an aperture on the first terminal part, through which the second terminal part is transposeable.

18. Assembly for treating body vessel disorders, said assembly comprising a device according to any of the preceding claims, and,

- introducing and/or removing means for introducing and or removing the device to and/or from the desired location within a vessel.

19. Assembly according to claim 18 wherein the introducing and or removal means comprise and expandable/deflateable balloon catheter.

20. Process for arranging a device according to any of the claims 1-17 within a body vessel, comprising the steps of,

- arranging the device in its contracted form around a balloon catheter, so that the device grips onto the balloon catheter,

- bringing the balloon catheter plus contracted device to a pre-determined position with a body vessel.

- expanding the balloon catheter whereby the device is also expanded, to such an extent that the releasably locking means are locked in position, whereby in this expanded use position the balloon catheter may optionally be deflated and removed.

21. Process according to claim 20 further comprising the steps of

- reintroducing a balloon catheter into the vessel,

- expanding the balloon catheter against the inner wall of the device to such an extent that the device is further expanded in order to release the releasable locking means,

- followed by deflating the balloon catheter whereby the device re-assumes its contracted position to grip around the balloon catheter,

whereafter the balloon catheter and device may be removed from the body vessel.

22. Method for treating vessels, for example transmission pipes or body vessels, utilizing a device according to any of the claims 1-17 and or the assembly according to the claims 18 or 19.

23. Use of a device according to any of the claims 1-17 and/or the assembly according to claims 18 or 19 for treating vessels of the digestive tract.

24. Use of the device according to any of the claims 1 to 17 and/or the assembly according to claims 18 or 19 for treating vessels of the urinary tract.

25. Use of the device according to any of the claims 1 to 17 and/or the assembly according to claims 18 or 19 for treating the vessels of the airways, such as the trachaea and bronchii, in particular in brachy therapy.

26. Use of the device according to any of the claims 1 to 17 and/or the assembly according to claims 18 or 19 for treating blood vessels such as arteries and/or veins.

27. Use of the device according to any of the claims 1 to 17 and/or the assembly according to claims 18 or 19 for locally radioactively treating a body vessel.

28. Use of the device according to any of the claims 1-17 and/or the assembly according to claim 15 or 16 for non-medical application, in particular for internally supporting transmission pipes and the like.

29. A method for preparing an expandable stent comprising the steps of:-

forming a generally spiral shaped element having a first free end and a second free end, the spiral element having a contracted configuration in which the first free end is an inner free end and the second free end is an outer free end; and

reversing the spiral so that the first free end becomes an outer free end and the stent is pretensioned.

30. A method for operating an expandable stent in the form of a generally spiral-shaped element the method comprising the steps of:-

delivering the stent in the pretensioned configuration to a desired site;

deploying the stent by expanding the stent to a first expanded configuration; and

retrieving the stent by expanding the stent further to a second expanded configuration.

31. A method for manipulating a stent having a pretensioned contracted configuration, a first expanded configuration and a second expanded configuration, the method comprising the steps of:-

delivering the stent in a pretensioned contracted form to a desired site;

deploying the stent by expanding the stent to the first expanded configuration; and

subsequently retrieving the stent by further expanding the stent to the second expanded configuration whereby the stent collapses.

32. A method as claimed in claim 31 wherein the pretensioned contracted stent is mounted on an introduction balloon catheter and the method includes the steps of advancing the balloon catheter to a desired site and inflating the introduction balloon to deploy the stent.

33. A method as claimed in claim 31 or 32 wherein the stent is retrieved by advancing a retrieval balloon catheter to the stent and inflating the retrieval balloon to expand the deployed stent to the second expanded configuration whereby the stent collapses.

34. An expandable stent comprising a generally spiral shaped element having a pretensioned configuration for delivery to a desired site, a first expanded configuration for deployment of the stent, and a second expanded configuration for retrieval of the stent, the stent having a medicament delivery system for delivery of a medicament at a target site.

35. A stent as claimed in claim 34 wherein the medicament system comprises a coating containing a medicament.

36. A stent as claimed in claim 34 or 35 wherein the medicament delivery system comprises a craft or tissue containing a medicament.

37. A stent as claimed in claim 36 wherein the tissue or craft is of layered construction.

38. A stent as claimed in claim 37 wherein the tissue or craft comprises a first layer for drug delivery in one direction and a second layer to prevent drug delivery in an opposite direction.

39. A stent as claimed in any of claims 36 to 38 wherein the stent comprises a number of rings extending from a spine and the craft or tissue extends at least some of the adjacent rings.

40. A method for delivery of a drug medicament to a target site comprising

providing a stent with a medicament delivery system;

delivering the stent to a desired site;

deploying the stent to deliver the medicament; and

retrieving the stent.

41. A method as claimed in claim 40 wherein the stent is a stent as claimed in any of claims 34 to 39.